REMARKS

The Office Action mailed July 14, 2005 has been carefully considered. After such consideration, claim 10 has been amended.

The Office Action objected to claim 10 as appearing to depend from claim 10. That error has been corrected. Claims 13 and 14 are allowed.

The Office Action rejected claims 1-5, 8, 10, and 17-19, under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,347,744 to Buchanan in view of U.S. Patent No. 4,388,833 to Kuwayama and U.S. Patent No. 4,143,545 to Sitabkhan.

In order to reject claims under 35 USC 103 a prima facie case of obviousness is needed. (In re Reuter, 651 F. 2d. 751, 210 U.S.P.Q. 249 (CCPA 1981)). In this case, The Applicant respectfully submits that the Office Action has failed to establish a prima facie case of obviousness.

It has been repeatedly held by the Court of Appeals for the Federal Circuit, that absent some teaching, suggestion, or incentive supporting a combination of references, obviousness cannot be established by combining the teachings of the prior art (ACS Hospital Systems, Inc. v. Montefiori Hospital, 732 F.2d. 1572, 1577, 221 U.S.P.Q. 929, 939 (CAFC 1984)). This has been interpreted to mean that there must be a reasonable intrinsic or extrinsic justification for the proposed combination of references in order to properly reject the claims of an invention. The Office Action must propose some logical reason apparent from the evidence of record that justifies the combination or modification of the references (In re Regel, 188 U.S.P.Q. 132 (CCPA 1975)). Therefore, it is important in the instant situation to examine whether or not there exists a reasonable intrinsic or extrinsic justification for the proposed combination of references.

The Present Invention

As seen in Figure 2, applicant's manual resuscitator apparatus includes a housing 4 having an inlet 28 and outlet 24 connected by a communication path to permit air flow through the communication path. A pressure gauge forms part of the housing and has a sensing chamber 30 in communication with the communication path. The apparatus includes an atmospheric chamber 36 in communication with ambient atmosphere. The chambers are separated by a diaphragm 16 subject to distortion from a rest position upon a differential pressure between the chambers. A spring 15 is associated with the diaphragm 16 to restore the diaphragm 16 to a rest position upon equalization of the pressures in the chambers. A first bearing is attached to the diaphragm and a second bearing is located in one of the chambers. A shaft is journaled in the bearings for rotation in one direction upon diaphragm distortion and rotation in another direction by diaphragm restoration. An indicator 14 is associated with the shaft to indicate differences in pressure between the sensing and atmospheric chambers causing diaphragm distortion.

As claimed in claim 17, a method of providing respiratory assistance to a patient includes the steps of supplying air to the patient through a housing having an inlet and outlet connected by a communication path, and displaying the pressure of supplied air in the housing on a pressure gauge. The pressure gauge is integrally mounted to the housing. The pressure is displayed on the gauge by distorting a diaphragm from a rest position upon a differential pressure between two chambers in the housing and restoring the diaphragm to the rest position upon equalization of the pressures in the chambers, thereby moving an indicator coupled to the diaphragm to indicate differences in pressure between the chambers.

Prior Art

Buchanan discloses a sealed differential pressure gauge for low differential air pressure use. Buchanan stresses the importance of lower inertia in his helix and pointer. (Col. 1, lines 1-13 and lines 53-54) As seen in Figure 2, Buchanan's pressure gauge includes a housing 14 and a back plate 24, in which the diaphragm 30 is mounted to divide the pressure cavity 32 into separate pressure chambers 33 and 34. (Col. 4, lines 18-23) As seen in Figures 4-7 notches 150 and 154 in the housing receive protuberances 142 and 144 of the diaphragm. (Col. 6, lines 60-66) A variation in pressure in the respective chambers is translated by corresponding movement of the diaphragm into movement of a leaf spring 39 to which a magnet 42 is mounted. (Col. 4, lines 33-36) The gauge has a magnetic helix, and the magnet movement drives the helix. Buchanan provides a wishbone mounting arrangement for the helix and zero set mechanisms designed to improve sensitivity and increase operating range. (Col. 1, lines 64-68)

Sitabkhan discloses a helical coil bourdon tube sensor capable of indicating a pressure differential for aircraft tires that are subject to extreme variations in ambient pressure and temperature during normal usage. (Col. 1, lines 8-10 and lines 16-19) In the embodiment of Figure 1, Sitabkhan discloses bearing member 62 connected to a connector member 66. The connector member 66 rotates with the helical coil bourdon tube 48 and, in turn, rotates a magnetic ring 64. A separate bearing 70 supports magnet 72, and the flux linkage of the magnets causes the second to rotate pointer 36 when the first magnet is rotated by the bourdon tube. This permits hermetic sealing of the bourdon tube from the exterior of the housing. (Col. 9, lines 50-69) Thus, both Buchanan and Sitabkhan use a pair of magnets to transfer motion from the diaphragm to a pointer.

Kuwayama discloses a differential pressure gauge which incorporates a displacement transducer for producing a displacement corresponding to a differential pressure and converting the displacement into an electric signal. (Col.1, lines 5-9)

The prior art does not render the present invention obvious

1. Buchanan is a sealed gauge.

Applicant believes that the examiner has misinterpreted Buchanan. Buchanan does not disclose an atmospheric chamber in communication with ambient atmosphere as claimed. Buchanan teaches a sealed type differential pressure gauge. (Col. 1, line 7) A sealed gauge measures pressure relative to a fixed standard, regardless of local atmospheric pressure.

2. Buchanan has no bearings as claimed.

The Office Action says Buchanan has protuberances 142, 144 acting as bearings and notches. This is incorrect. Buchanan says: "As indicated in Figs. 4 and 5, the recess 86 of the housing member 14 is formed to define a notch 150 that receives the diaphragm protuberance 142, and an elongated notch 152 that receives the diaphragm protuberance 144." (Col. 6, lines 60-64) These are not bearings.

3. There is no motivation to combine.

A person of ordinary skill in the art would not be motivated to combine Buchanan with Sitabkhan or Kuwayama. Buchanan specifically arranges the gauge helix, magnet, the wishbone mounting arrangement for the helix, and the zero set mechanisms to improve sensitivity and increase operating range. (Col. 1, lines 64-68) As such, a person of ordinary skill in the art would not be motivated to change that arrangement to include a shaft journaled in a first and second bearings. The addition of a shaft journaled in first and second bearings would disrupt the leaf spring and magnet arrangement that Buchanan teaches as an improvement. Sitabkhan does not motivate the substitution of a shaft in bearings houses a similar magnetic linkage.

Also, diaphragm type pressure gauges and helical coil bourdon tube type pressure gauges are used for different applications. Sitabkhan, for instance, uses a helical coil bourdon tube that is capable of providing a 360° deflection with a pressure differential of 300 psi. (Col. 4, lines 5-7) Such a helical coil bourdon tube is typically used for higher pressure purposes. On the contrary, a diaphragm, such as Buchanan's, is for "low pressure range use" (from about 0.5 in water column to about 20 in water column). (Col. 3, lines 61-62)

According to http://xtronics.com/reference/convert.htm to convert in. water into psi, one multiplies the in. water measure by 3.612×10^{-2}. Therefore to convert Buchanan's units to Sitabkan's:

0.5 inches of water $\times 3.612 \times 10^{-2} = 1.806 \times 10^{-2}$ psi = .01806 psi, and

20 inches of water $\times 3.612 \times 10^{-2} = 72.24 \times 10^{-2}$ psi = .7224 psi.

The Sitabkan gauge, which is useful in the 300 psi range, measures pressures over four hundred times greater than the pressures measured in the Buchanan reference. The difference is so great that a person of ordinary skill in the art would not be motivated to combine Sitabkhan's helical coil bourdon tube with the diaphragm type differential pressure gauge of Buchanan. Kuwayama does not fill in the gap.

By this amendment, the applicant has placed the case in condition for immediate allowance and such action is respectfully requested. However, if any issue remains unresolved, applicant's attorney would welcome the opportunity for a telephone interview to expedite allowance and issue.

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